

What is claimed is:

1. A client software program for providing instructions to one or more processors to execute processes on an embedded computing device configured for establishing a network connection with at least one other computing device, comprising:

(a) an operating system layer including a first operating system and an operating system abstraction layer, wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system;

(b) a programming environment; and

(c) an application framework.

2. The client software program of Claim 1, wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system.

3. The client software program of Claim 2, wherein the operating system abstraction layer is further configured to provide the first platform dependent code to the first operating system which is installed on the embedded computing device, and to provide the second platform dependent code to the second operating system when the second operating system is installed on the embedded computing device.

4. The client software program of Claim 3, wherein the embedded computing device comprises a first processor, wherein the first operating system is configured to provide instructions to the first processor, and wherein the embedded computing device is configured for exchanging the first processor with a second processor, wherein the second operating system is configured to provide instructions to the second processor.

5. The client software program of Claim 1, wherein the operating system layer further comprises a second operating system, wherein the operating system abstraction layer is configured to interface between platform independent code and second platform dependent code used by the second operating system.

6. A client software program for providing instructions to one or more processors to execute processes on an embedded computing device configured for establishing a network connection with at least one other computing device, comprising:

(a) an operating system layer including a first operating system;

(b) a programming environment; and

(c) an application framework,

(d) wherein the client software program is configured to interface with a client support server including a type converter module for translating complex content to simplified content, and

(e) wherein the client software program is configured to receive the simplified content from the client support server for processing the simplified content.

7. The client software program of Claim 6, wherein the client support server further includes a protocol converter module for mapping at least one complex protocol to a simplified protocol, the client software program being configured to use the simplified protocol.

8. The client software program of Claim 7, wherein the application framework includes a package manager, and wherein the client support server further includes a package repository, and wherein the package manager is configured to communicate with the package repository for receiving package data for running a software package on the embedded computing device.

9. The client software program of Claim 8, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the package data.

10. The client software program of Claim 6, wherein the application framework includes a package manager, and wherein the client support server further includes a package repository, and wherein the package manager is configured to communicate with the package repository for receiving package data for running a software package on the embedded computing device.

11. The client software program of Claim 10, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the package data.

12. The client software program of Claim 6, wherein the operating system layer further includes an operating system abstraction layer, wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system, the platform independent code arising from platform independent data received from the at least one other computing device when the embedded computing device has established the network connection thereto.

13. The client software program of Claim 12, wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system.

14. A client software program for providing instructions to one or more processors to execute processes on an embedded computing device configured for establishing a network connection with at least one other computing device, comprising:

(a) an operating system layer including a first operating system;

(b) a programming environment; and

(c) an application framework,

(d) wherein the client software program is configured to interface with a client support server including a protocol converter module for mapping at least one complex protocol to a simplified protocol, and

(e) wherein the client software program is configured to receive and use the simplified protocol.

15. The client software program of Claim 14, wherein the application framework includes a package manager, and wherein the client support server further includes a package repository, and wherein the package manager is configured to communicate with the package repository for receiving package data for running a software package on the embedded computing device.

16. The client software program of Claim 15, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the package data.

17. The client software program of Claim 14, wherein the operating system layer further includes an operating system abstraction layer, wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system, the platform independent code arising from platform independent data received from the at least

one other computing device when the embedded computing device has established the network connection thereto.

18. The client software program of Claim 17, wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system.

19. A client software program for providing instructions to one or more processors to execute processes on an embedded computing device configured for establishing a network connection with at least one other computing device, comprising:

(a) an operating system layer including a first operating system;

(b) a programming environment; and

(c) an application framework including a package manager, and

(d) wherein the client software program is configured to interface with a client support server including a package repository, and

(e) wherein the package manager is configured to communicate with the package repository for receiving package data for running a software package on the embedded computing device.

20. The client software program of Claim 19, wherein the package manager includes a package registry, and wherein the package manager is configured to compare the package registry with package data needed to run the software package and to communicate with the package repository for receiving the software package and the package data.

21. The client software program of Claim 19, wherein the operating system layer further includes an operating system abstraction layer, wherein the operating system abstraction layer is configured to interface between platform independent code and first platform dependent code used by the first operating system, the platform independent code arising from platform independent data received from the at least one other computing device when the embedded computing device has established the network connection thereto.

22. The client software program of Claim 21, wherein the operating system abstraction layer is further configured to provide second platform dependent code to a second operating system.

23. A method of transferring simplified data to a client running on an embedded device from complex data residing on a content server, using a converter service running on a client support server, comprising the steps of:

- (a) communicating a transfer request of the complex data from the content server to the client running on the embedded device;
- (b) communicating a conversion request to the client support server to convert the complex data to the simplified data;
- (c) retrieving the complex data;

- (d) converting the complex data to the simplified data; and
- (e) transferring the simplified data to the client.

24. The method of Claim 23, wherein the complex data includes complex content and the simplified data includes simplified content translated from the complex content at the converting step.

25. The method of Claim 23, wherein the complex data includes a complex protocol and the simplified data includes a simplified protocol mapped from the complex protocol at the converting step.

26. The method of Claim 23, further comprising the steps of:

- processing the simplified data in a programming environment using platform independent code;
- converting the platform independent code using an operating system abstraction interface; and
- processing the data using an operating system running platform dependent code.

27. A method of transferring simplified data to a client running on an embedded device from complex data residing on a server, using a converter service software module, comprising the steps of:

- (a) communicating a transfer request of the complex data from the server to the client running on the embedded device;
- (b) communicating a conversion request for the converter service software module to convert the complex data to the simplified data;



- (c) retrieving the complex data;
- (d) converting the complex data to the simplified data; and
- (e) transferring the simplified data to the client.

28. The method of Claim 27, wherein the complex data includes complex content and the simplified data includes simplified content translated from the complex content at the converting step.

29. The method of Claim 27, wherein the complex data includes a complex protocol and the simplified data includes a simplified protocol mapped from the complex protocol at the converting step.

30. The method of Claim 27, further comprising the steps of:  
processing the simplified data in a programming environment using platform independent code;  
converting the platform independent code using an operating system abstraction interface; and  
processing the data using an operating system running platform dependent code.

31. A method of transferring package data needed to run a software package residing on a content server to a client running on an embedded device, using a package repository running on a client support server, comprising the steps of:

- (a) communicating a transfer request of the software package from the content server to the client running on the embedded device;

(b) communicating a conversion request to the package repository for package data needed to run the software package on the embedded device;

(c) transferring the package data from the package repository to the client; and

(d) transferring the software package from the content server to the client.

32. The method of Claim 31, further comprising the steps of:

communicating a feature request to the package repository for package metadata needed to run the software package on the embedded device; and

transferring the package metadata from the package repository to the client.

33. The method of Claim 31, further comprising the steps of:

processing data using the software package in a programming environment using platform independent code;

converting the platform independent code using an operating system abstraction interface; and

processing the data using an operating system running platform dependent code.

34. A method of transferring package data needed to run a software package to a client running on an embedded device, using a package repository software module, comprising the steps of:

(a) communicating a transfer request of the software package from the server to the client running on the embedded device

(b) communicating a conversion request to the package repository software module for package data needed to run the software package on the embedded device;

(c) transferring the package data to the client via the package repository software module; and

(d) transferring the software package from the server to the client.

35. The method of Claim 34, further comprising the steps of:

communicating a feature request to the package repository software module for package metadata needed to run the software package on the embedded device; and

transferring the package metadata to the client via the package repository software module.

36. The method of Claim 34, further comprising the steps of:

processing data using the software package in a programming environment using platform independent code;

converting the platform independent code using an operating system abstraction interface; and

processing the data using an operating system running platform dependent code.

37. A method of processing data on an embedded device having an operating system running platform dependent code thereon, the embedded device being configured for establishing a network connection with at least one other computing device, comprising steps of:

(a) receiving platform independent data from the at least one other computing device for processing in a programming environment using platform independent code;

(b) converting the platform independent code using an operating system abstraction interface; and

(c) processing the data using the operating system.

38. A server software program running on a server computer for providing instructions to one or more processors to execute processes in support of an embedded computing device having a client software program running thereon and being configured for establishing a network connection with the server, comprising:

(a) at least one data conversion module for converting complex data to simplified data for sending to the embedded computing device for processing thereon; and

(b) a package repository module configured to communicate with the package manager for sending package data to the embedded computing device for running a software package on the embedded computing device.

39. The server software program of Claim 38, wherein the package repository module is further configured to communicate with the package manager for sending package metadata to the embedded computing device for running the software data.

40. The server software program of Claim 38, wherein the complex data includes complex content and the simplified data includes simplified content translated from the complex content by the at least one data conversion module.

41. The server software program of Claim 38, wherein the complex data includes a complex protocol and the simplified data includes a simplified protocol mapped from the complex protocol by the at least one data conversion module.

42. A server software program running on a server computer for providing instructions to one or more processors to execute processes in support of an embedded computing device having a client software program running thereon and being configured for establishing a network connection with the server, comprising:

(a) a package repository module configured to communicate with the package manager for sending package data to the embedded computing device for running a software package on the embedded computing device, and,

(b) wherein the package repository module is further configured to communicate with the package manager for sending package metadata to the embedded computing device for running the software data.

43. A server software program running on a server computer for providing instructions to one or more processors to execute processes in support of an embedded computing device having a client software program running thereon and being configured for establishing a network connection with the server, comprising:

(a) at least one data conversion module for converting complex data to simplified data for sending to the embedded computing device for processing thereon, and

(b) wherein the complex data includes complex content and the simplified data includes simplified content translated from the complex content by the at least one data conversion module.

44. A server software program running on a server computer for providing instructions to one or more processors to execute processes in support of an embedded

computing device having a client software program running thereon and being configured for establishing a network connection with the server, comprising:

(a) at least one data conversion module for converting complex data to simplified data for sending to the embedded computing device for processing thereon, and

(b) wherein the complex data includes a complex protocol and the simplified data includes a simplified protocol mapped from the complex protocol by the at least one data conversion module.

45. The server software program of Claim 44, wherein the complex data further includes complex content and the simplified data further includes simplified content translated from the complex content by the at least one data conversion module.